

**CLAIMS**

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is as follows:

- 1 1. A computer system for assisting to search for one or more sell bids among two or  
2 more sell bids, comprising:  
3 an initial view generator that creates an initial view of at least one sell bid on a  
4 visual interface, the at least one sell bid being represented by bid lines in a Cartesian  
5 coordinate system, the bid lines intersecting with at least one attribute preference line;  
6 one or more target area modules that creates one or more target areas on the visual  
7 interface, the bid lines being located within the target area;  
8 one or more target line modules that creates one or more target lines on the visual  
9 interface, the one or more target lines being representative of values for individual  
10 attributes; and  
11 one or more winning bid list generator modules that creates one or more winning  
12 bid lists based on the one or more target lines in the one or more target areas.
- 1 2. The system of claim 1, further comprising one or more filtering modules that executes  
2 one or more filters on the visual interface in order to change the initial view of the at least  
3 one sell bid in accordance with one or more business rules. 16.
- 1 3. The system of claim 1, wherein the one or more target line modules allowing a visual  
2 comparison between the one or more sell bids which are closest to the one or more target  
3 lines in the one or more target areas.
- 1 4. The system of claim 1, further comprising one or more central processing units  
2 (CPUs), one or more memories and one or more network interface to one or more

3 networks associated with the one or more visual interface.

1 5. The system of 1, wherein the at least one sell bid comprises one or more attributes.

1 6. The system of 5, wherein the one or more attributes is a pair of name and value, and is  
2 grouped into categories including product specification, service specification, and  
3 supplier qualification.

1 7. The system of 6, wherein the product specification includes attributes such as price,  
2 material quality and properties, color and size

1 8. The system of 6, wherein the service specification includes delivery time and cost, and  
2 warranty.

1 9. The system of 6, wherein the supplier qualification includes trading history,  
2 experience and reputation.

1 10. The system of 6, wherein the value range of a numeric attribute specifies lower and  
2 upper limits of desirable attribute values, and the value range of a categorical attribute  
3 specifies names that are acceptable for the category of the categories.

1 11. The system of 1, wherein the at least one the sell bid is submitted to one or more  
2 Request for Quote (RFQ).

1 12. The system of 11, wherein:  
2 the RFQ comprises one or more attributes;  
3 the one or more sell bids represents any object that has one or more attributes; and  
4 the RFQ represents any object that has one or more attributes.

1 13. The system of 1, wherein the initial view generator module comprises one or more  
2 RFQ view generator modules, one or more bid view generator modules, and one or more  
3 bid scorer modules.

1 14. The system of 13, wherein the one or more RFQ view generator modules creates one  
2 or more RFQ views of input RFQ.

1 15. The system of 13, wherein the one or more bid view generator modules creates one  
2 or more bid views of input sell bids.

1 16. The system of 13, wherein the one or more bid scorer modules creates a score for  
2 each sell bid in the input set of the at least one sell bid, and ranks the at least one sell bid  
3 by score.

1 17. The system of 2, wherein the filtering module includes a show-top-N operation that  
2 displays the bid lines of the at least one sell bid that are ranked top N by the bid scorer  
3 module, where N is a number specified by the user.

1 18. The system of 1, wherein the one or more target area modules at least creates and  
2 modifies a region of desirable attribute value ranges in the bid view of the visual  
3 interface.

1 19. The system of 1, wherein the one or more target line modules creates a set of  
2 attribute values on the bid view of the visual interface by using one or more pointing  
3 device operations.

1 20. A method of assisting to search for one or more sell bids among two or more sell  
2 bids comprising the steps of:

receiving a Request for Quotes (RFQ) and one or more sell bids that are submitted to the RFQ;

creating one or more RFQ views on a visual interface;

creating one or more bid views on a visual interface in a Cartesian coordinate system, the bid views being represented by bid lines associated with the one or more sell bids;

creating one or more bid scores on a visual interface based on attribute values of the one or more sell bids;

executing at least one of (i) one or more filtering operations, (i) one or more target area operations, and (iii) one or more target line operations on the visual interface; and

executing one or more winning bid list generating operations to create one or more winning bid lists based on the executing step, wherein

the filtering operations execute one or more filters on the visual interface in order to change the bid view in accordance with one or more business rules,

the target area operations create one or more target areas on the visual interface such that the bid lines are located within the one or more target areas,

the target line operations create one or more target lines on the visual interface which allows a visual comparison between the bids lines which are closest to the one or more target lines in the one or more target areas.

21. The method of claim 20, further comprising the step of calculating a distance between the one or more target lines and a desired sell bid.

22. The method of claim 21, wherein the distance between the desired sell bid and the one or more target lines is calculated by

$$D_i = \sum_j w_j |a_{ij} - a_y| / N_j, \text{ and}$$

$$N_j = \max_i (|a_{ij} - a_y|)$$

wherein

6  $D_i$  denotes the distance of a sell bid  $i$  from the target line,  
 7  $w_j$  represents a weight of attribute  $j$ .  
 8  $a_{ij}$  and  $a_j$  denote a value of the attribute  $j$  for sell bid  $i$  and the target line,  
 9 respectively.  
 10  $N_j$  is a normalization factor for the attribute  $j$ .

1 23. An interface for assisting to search for one or more sell bids among two or more sell  
 2 bids comprising:  
 3 a Request for Quotes (RFQ) view that displays RFQ under consideration, and a  
 4 bid view that displays in a Cartesian coordinate system a set of sell bids submitted to the  
 5 RFQ under consideration;  
 6 one or more attribute lines that represent one or more attributes specified in the  
 7 RFQ and the set of sell bids;  
 8 one or more bid lines that represent the one or more sell bids, the bid lines being  
 9 represented in the Cartesian coordinate system;  
 10 one or more target areas that represent desirable attribute value ranges specified in  
 11 the RFQ; and  
 12 one or more target lines that represent one or more desirable attribute values  
 13 specified in the bid view.

1 24. The interface of claim 23, wherein the RFQ view provides one or more attribute  
 2 name and value range pairs.

1 25. The interface of claim 24, wherein the value range of an attribute is editable.

1 26. The interface of claim 23, wherein the one or more target lines permit selection of  
 2 attribute values for a subset of the attributes given in the RFQ under consideration.

27. The interface of claim 23, wherein selecting a target line of the one or more target lines results in a display of N sell bids that are closest to the target line in distance, where N is a number specified by the user.

28. The interface of claim 27, wherein the distance between the sell bids and the target line is computed by

$$D_i = \sum_j w_j |a_{ij} - a_{tj}| / N_j, \text{ and}$$

$$N_j = \max_i (|a_{ij} - a_{tj}|)$$

wherein

$D_i$  denotes the distance of a sell bid  $i$  from the target line,

$w_j$  represents a weight of attribute  $j$ .

$a_{ij}$  and  $a_{tj}$  denote a value of the attribute  $j$  for sell bid  $i$  and the target line, respectively.

$N_j$  is a normalization factor for the attribute  $j$ .

29. The interface of claim 27, wherein the distance of the sell bid from the target line is a sum of the weighted distances of individual attributes divided by a normalization factor.

30. The interface of claim 23, further comprising:

one or more attribute check-boxes that allow a select or de-select the one or more attributes; and

one or more filters that allow to filter the bid lines displayed in the bid view.

31. A machine readable medium containing code for searching for one or more sell bids among two or more sell bids, the code implementing the steps of:

receiving a Request for Quotes (RFQ) and one or more sell bids that are submitted to the RFQ;

creating one or more RFQ views on a visual interface;

6 creating one or more bid views on a visual interface in a Cartesian coordinate  
7 system, the bid views being represented by bid lines associated with the one or more sell  
8 bids;

9 creating one or more bid scores on a visual interface based on attribute values of  
10 the one or more sell bids;

11 executing at least one of (i) one or more filtering operations, (i) one or more target  
12 area operations, and (iii) one or more target line operations on the visual interface; and

13 executing one or more winning bid list generating operations to create one or  
14 more winning bid lists based on the executing step, wherein

15 the filtering operations execute one or more filters on the visual interface  
16 in order to change the bid view in accordance with one or more business rules,

17 the target area operations create one or more target areas on the visual  
18 interface such that the bid lines are located within the one or more target areas,

19 the target line operations create one or more target lines on the visual  
20 interface which allows a visual comparison between the bids lines which are closest to the  
21 one or more target lines in the one or more target areas.